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ATTORNEY DOCKET NO.: 0492611-0510 (MIT 10443)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Manalis, et al. Examiner: Lum, Leon Yun Bon
Serial No.: 10/669,883 Art Unit: 1641
Filing Date: September 23, 2003
Title: Fabrication and Packaging of Suspended Microchannel Detectors

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

STATEMENT

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, Applicant requests consideration of this Information Disclosure Statement.

Type of Statement

The present Information Disclosure Statement is:

- ☒ An *original* Information Disclosure Statement; or
☐ A *supplemental* Information Disclosure Statement.

Certificate of Mailing	
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9-9-04	<i>Sandra Saccocia</i>
Date	Signature
Sandra Saccocia	
Typed or Printed Name of person signing certificate	

Compliance with 37 CFR § 1.97

The present Information Disclosure Statement is being filed:

☒ Pursuant to 37 CFR § 1.97(b); no fee or certification is required:

☐ Within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d);

☐ Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application;

☒ Before the mailing of a first Office action on the merits; or

☐ Before the mailing of a first Office action after the filing of a request for continued examination under § 1.114.

☐ Pursuant to 37 CFR § 1.97(c) after the dates listed above but before the mailing date of any of a final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application; Applicant hereby *either*:

☐ Certifies that *either*:

☐ each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making

reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.; or

☐ Includes herewith the fee set forth in § 1.17(p).

☐ Pursuant to 37 CFR § 1.97(d), after the mailing date of any final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application; Applicant hereby *both*:

☐ Certifies that *either*:

☐ each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.; and

☐ Includes herewith the fee set forth in § 1.17(p).

Content of the Information Disclosure Statement

Applicant hereby makes of record in the above-identified application the reference(s) listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

Applicant includes copies of references as indicated below:

☒ A copy of each cited reference not indicated with an asterisk is included;

☐ Copies of references indicated with an asterisk on the attached form PTO-1449 are not included pursuant to 37 CFR § 1.98(d) because they were previously provided to the United States Patent Office in an Information Disclosure Statement that complies with 37 CFR § 1.98(a)-(c) and was submitted in the following patent application that is relied upon in the present case for an earlier effective filing date under 35 USC § 120:

Serial Number	Filing Date	Status

☐ Copies of English translations of one or more non-English references are included.

Applicant hereby makes the following additional information of record in the above-identified application:

Applicant certifies that the Information Disclosure Statement *either*:

☒ Does not contain non-English language citations;

☐ Does contain non-English language citations, of which the following is a concise explanation:

☐ Includes one or more translations of a non-English citation.

Remarks

The submission of this Information Disclosure Statement should not be construed as a representation that a search has been made.

The submission of this Information Disclosure Statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b) .

The submission of this Information Disclosure Statement shall not be construed as a representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

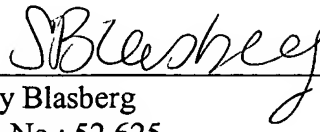
It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;
2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited patent(s) and publication(s) has (have) been fully considered by the Patent and Trademark Office during the examination of this application; and
3. The citations for the patent(s) and publication(s) be printed on any patent which issues from this application.

Notwithstanding any statements by Applicants, the Examiner is urged to form his or her own conclusions regarding the relevance of the cited reference(s).

Respectfully submitted,

Dated: 9/9/04



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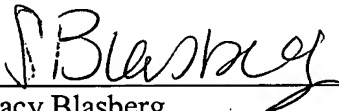
TRANSMITTAL LETTER

Enclosed are the following documents:

1. Information Disclosure Statement (6 pages);
2. Form PTO-1449 (4 pages);
3. Cited Art (60); and
4. Return Postcard

If any additional fees are required to be paid or if any overpayment has been made, please charge same to Deposit Account No. 03-1721.

Respectfully submitted,


Stacy Blasberg
Registration No. 52,625

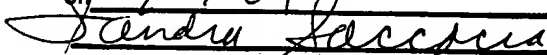
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on 9-9-04



INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

Applicant: Manalis, et al.

Filing Date:
September 23, 2003

Group:

U.S. PATENT DOCUMENTS

Examiner's Initials	U.S. Patent No.	Applicant	Issue Date	Class	Subclass
	6,473,187	Manalis	October 29, 2002		
	6,307,202	Manalis et al.	October 23, 2001		
	6,156,216	Manalis et al.	December 5, 2000		
	6,075,585	Minne et al.	June 13, 2000		
	6,002,131	Manalis et al.	December 14, 1999		
	5,883,705	Minne et al.	March 16, 1999		
	5,742,377	Minne et al.	April 21, 1998		

U.S. PATENT APPLICATIONS

Examiner's Initials:	Publication Number:	Applicant:	Publication Date:	Group:	Art Unit:
	2003/0000291	Kolosov et al.	January 2, 2003		
	2003/0073071	Fritz et al.	April 17, 2003		
	2003/0027351	Manalis et al.	February 6, 2003		
	2002/0137084	Quate et al.	September 26, 2002		

FOREIGN PATENT DOCUMENTS

Examiner's Initials	Document No.	Country	Date	Translation	
				Yes	No

OTHER DOCUMENTS

Examiner's Initials	Citation (Including Author, Title, Date, Pertinent Pages, Etc.)
	Albrecht, et al., "Frequency Modulation Detection using High-Q Cantilevers for Enhanced Force Microscope Sensitivity", <i>J. Appl. Phys.</i> 69(2): 668-673, 1991.
	Anczykowski, et al., "Analysis of the Interaction Mechanisms in Dynamic Mode SFM by Means of Experimental Data and Computer Simulation", <i>Appl. Phys. A.</i> 66: S885-S889, 1998.
	Berenschot, et al., "Advanced Sacrificial Poly-Si Technology For Fluidic Systems", <i>J. Micromech. Microeng.</i> 12: 621-624, 2002.
	Chen, et al., "Noncovalent Functionalization of Carbon Nanotubes for Highly Specific Electronic Biosensors", <i>PNAS</i> , 100(9): 4984-4989, 2003.
	Cheng, et al., "Localized Silicon Fusion and Eutectic Bonding for MEMS Fabrication and Packaging", <i>Journal of Microelectromechanical Systems</i> , 9(1): 3-8, 2000.

Form PTO-1449 (REV. 8-83)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket: 0492611-0510 (MIT 10443),	In re Application No. 10/669,883
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: Manalis	
		Filing Date: September 23, 2003	Group:
	Cui, et al., "Nanowire Nanosensors for Highly Sensitive and Selective Detection of Biological and Chemical Species", <i>Science</i> , 293 : 1289-1292, 2001.		
	deBoer, et al., "Micromachining of Buried Micro Channels in Silicon", <i>Journal of Microelectromechanical Systems</i> , 9 (1): 94-103, 2000.		
	Duffy, et al., "Rapid Prototyping of Microfluidic Systems in Poly(dimethylsiloxane)", <i>Anal. Chem.</i> 70 : 4974-4984, 1998.		
	Duffy, et al., "Rapid Prototyping of Microfluidic Switches in Poly(Dimethyl Siloxane) and Their Actuation by Electro-Osmotic Flow", <i>J. Micromech. Microeng.</i> 9 : 211-217, 1999.		
	Enoksson, et al., "Fluid Density Sensor Based on Resonance Vibration", <i>Sensors and Actuators A</i> : 327-331, 1995.		
	Enoksson, et al., "Vibration Modes of a Resonant Silicon Tube Density Sensor", <i>Journal of Microelectromechanical Systems</i> , 5 (1): 39-44, 1996.		
	Fritz, et al., "Electronic Detection of DNA by its Intrinsic Molecular Charge", <i>PNAS</i> , 99 (22): 14142-14146, 2002.		
	Fritz, et al., "Translating Biomolecular Recognition into Nanomechanics", <i>Science</i> , 288 : 316-318, 2000.		
	Garra, et al., "Dry Etching of Polydimethylsiloxane for Microfluidic Systems", <i>J. Vac. Sci. Technol. A</i> 20 (3): 975-982, 2002.		
	Harendt, et al., "Silicon Fusion Bonding and its Characterization", <i>J. Micromech. Microeng.</i> 2 : 113-116, 1992.		
	Inoue, et al., "Characteristics of New Dielectric Isolation Wafers for High Voltage Power IC's by Single-Si Poly-Si Direct Bonding (SPSDB) Technique", <i>IEEE Transactions on Electron Devices</i> , 42 (2): 356-358, 1995.		
	Ismail, et al., "Polysilicon and Titanium Disilicide Polycide Fusion Bonding for 3-D Microdevices Applications", 86-89.		
	Jackman, et al., "Microfluidic Systems with On-Line "UV Detection Fabricated in Photodefinable Epoxy", <i>J. Micromech. Microeng.</i> 11 : 263-269, 2001.		
	Jo, et al., "Three-Dimensional Micro-Channel Fabrication in Polydimethylsiloxane (PDMS) Elastomer", <i>Journal of Microelectromechanical Systems</i> , 9 (1): 76-81, 2000.		
	Juncker, et al., "Soft and Rigid Two-Level Microfluidic Networks for Patterning Surfaces", <i>J. Micromech. Microeng.</i> 11 : 532-541, 2001.		
	Khoury, et al., "Ultra Rapid Prototyping of Microfluidic Systems Using Liquid Phase Photopolymerization", <i>Lab Chip</i> , 2 : 50-55, 2002.		
	Koh, et al., "Investigations in Polysilicon CMP to Apply in Sub-Quarter Micron DRAM Device", <i>IEEE</i> , 214-217, 1999.		
	Lang, et al., "Sequential Position Readout from Arrays of Micromechanical Cantilever Sensors", <i>Appl. Phys. Lett.</i> 72 (3): 383-385, 1998.		

Form PTO-1449 (REV. 8-83)		U.S. Department of Commerce Patent and Trademark Office		Atty. Docket: 0492611-0510 (MIT 10443),	In re Application No. 10/669,883
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant: Manalis	
				Filing Date: September 23, 2003	Group:
	Lange, et al., "CMOS Resonant Beam Gas Sensing System with On-Chip Self Excitation", 547-552, 2001.				
	Lukosz, W., "Integrated Optical Chemical and Direct Biochemical Sensors", <i>Sensors and Actuators</i> , B29 : 37-50, 1995.				
	Maute, et al., "Detection of Volatile Organic Compounds (VOCs) with Polymer-Coated Cantilevers", <i>Sensors and Actuators B</i> , 58 : 505-511, 1999.				
	Pan, et al., "A Low-Temperature Wafer Bonding Technique Using Patternable Materials", <i>J. Micromech. Microorg.</i> 12 : 611-615, 2002.				
	Plöbßl, et al., "Wafer Direct Bonding: Tailoring Adhesion Between Brittle Materials", <i>Materials Science and Engineering</i> , R25 : 1-88, 1999.				
	Rasmussen, et al., "Fabrication Techniques to Realize CMOS-Compatible Microfluidic Microchannels", <i>Journal of Microelectromechanical Systems</i> , 10 (2): 286-297, 2001.				
	Raiteri, et al., "Micromechanical Cantilever-Based Biosensors", <i>Sensors and Actuators B</i> , 79 : 115-126, 2001.				
	Roulet, et al., "Fabrication of Multilayer Systems Combining Microfluidic and Microoptical Elements for Fluorescence Detection", <i>Journal of Microelectromechanical Systems</i> , 10 (4): 482-491, 2001.				
	Ryu, et al., "Precision Patterning of PDMS Thin Films: A New Fabrication Method and Its Applications", Defense University Research Initiative in Nanotechnology Program (NAVY CL 2468 ANTIC) the Nano Science and Engineering Center.				
	Savran, et al., "Fabrication and Characterization of a Micromechanical Sensor for Differential Detection of Nanoscale Motions", <i>Journal of Microelectromechanical Systems</i> , 11 (6): 703-708, 2002.				
	Schmid, et al., "Siloxane Polymers for High-Resolution, High-Accuracy Soft Lithography", <i>Macromolecules</i> , 33 : 3042-3049, 2000.				
	Sparks, et al., "A Density/Specific Gravity Meter Based on Silicon Microtube Technology", <i>Proceedings Sensors Expo</i> , 171-176, 2002.				
	Sparks, et al., "A Microfluidic System for the Measurement of Chemical Concentration and Density", <i>IEEE</i> , 300-303, 2003.				
	Stern, et al., "Nanochannel Fabrication for Chemical Sensors", <i>J. Vac. Sci. Technol. B.</i> 15 (6): 2887-2891, 1997.				
	Tamayo, et al., "Chemical Sensors and Biosensors in Liquid Environment Based on Microcantilevers with Amplified Quality Factor", <i>Ultramicroscopy</i> , 86 : 167-173, 2001.				
	Thundat, et al., "Detection of Mercury Vapor Using Resonating Microcantilevers", <i>Appl. Phys. Lett.</i> 66 (13): 1695-1697, 1995.				
	Tsau, et al., "Fabrication of Wafer-Level Thermocompression bonds" <i>Journal of Microelectromechanical Systems</i> , 11 (6): 641-647, 2002.				
	Vinod, et al., "A Novel SiC on Insulator Technology Using Wafer Bonding", International				

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	Conference on Solid-State Sensor and Actuators, 653-656, 1997.				
	Vörös, et al., "Optical Grating Coupler Biosensors", <i>Biomaterials</i> , 23 : 3699-3710, 2002.				
	Walsh, et al., Photoresist as a Sacrificial Layer by Dissolution in Acetone", <i>IEEE</i> , 114-117, 2001.				
	Wego, et al., "Fluidic Microsystems Based on printed Circuit Board Technology", <i>J. Micromech. Microeng.</i> 11 : 528-531, 2001.				
	Westberg, et al., "A CMOS-Compatible Fluid Density Sensor", <i>J. Micromech. Microeng.</i> 7 : 253-255, 1997.				
	Westberg, et al., "A CMOS-Compatible Device for Fluid Density Measurements Fabricated by Sacrificial Aluminium Etching", <i>Sensors and Actuators</i> , 73 : 243-251, 1999.				
	Wiegand, et al., "Wafer Bonding of Silicon Wafers Covered with Various Surface Layers", <i>Sensors and Actuators</i> , 86 : 91-95, 2000.				
	Wolffenbittel, R., "Low-Temperature Intermediate Au-Si Wafer Bonding: Eutectic or Silicide Bond", <i>Sensors and Actuators A</i> , 62 : 680-686, 1997.				
	Wu, et al., "Bioassay of Prostate-Specific Antigen (PSA) Using Microcantilevers", <i>Nature Biotechnology</i> , 19 : 856-860, 2001.				
EXAMINER				DATE CONSIDERED	
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.					

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